**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of claims:**

1.     (currently amended) A computer assisted, non-radiological method of intra-operatively measuring and assessing relative geometric relationships among skeletal features of a hip joint, suitable for surgical navigation of a hip arthroplasty operation, comprising the steps of:

defining a pelvic plane without reference to previously obtained radiological data by touching, with a trackable probe, ~~from~~ at least three superficial points corresponding to respective recognizable anatomic features of the pelvis and tracking said probe with a locating system;

tracking with said ~~a~~ locating system the orientation of an acetabular implant tool which is coupled to an acetabular implant, to obtain acetabular implant orientation data;

adjusting said acetabular implant into a desired orientation with respect to said defined pelvic plane, without reference to previously obtained radiological data, by relating said acetabular implant orientation data to said defined pelvic plane;

touching, with a trackable probe, ~~locating~~ at least three points on said acetabular implant and tracking said probe with said locating system;

based on the tracked locations of said at least three points on said acetabular implant, calculating an orientation of said acetabular implant; and

comparing the calculated orientation of said acetabular

implant to said desired orientation to verify proper orientation of the acetabular implant.

2.  (canceled)

3.  (currently amended) The method of claim 2̶1, wherein said anatomical pelvic features comprise at least three of an ipsilateral anterior superior iliac spine, a contralateral anterior superior iliac spine, an ipsilateral pubic tubercle, and a contralateral pubic tubercle.

4.  (currently amended) The method of claim 2̶1, further comprising the steps of:

fixing a trackable marker having at least three optical tracking references on the pelvic bone,

defining a pelvic marker reference system without reference to previously obtained radiological data, associated with said pelvic marker;

determining a relationship between said pelvic marker reference system and said pelvic plane̶; and

tracking said pelvic plane by (a) tracking said reference marker with said locating system, and (b) applying a transformation to compensate for the determined relationship between said reference marker and said pelvic plane.

5.  (currently amended) A method of determining changes between pre-operative and post-operative relationships between a femur and a pelvis, suitable for use during a hip arthroplasty operation, comprising the steps of:

maneuvering the femur into a natural reference position;

securing a trackable marker <u>having at least three optical tracking references</u> to the femur by gripping the femur without penetrating through the outer cortical shell of the femur;

measuring, by <u>optically</u> tracking said trackable marker with a non-radiological locating system, pre-replacement femoral parameters in relation to the pelvis;

after implanting a prosthetic, returning the femur to ~~the~~ <u>said natural</u> reference position;

again measuring, by <u>optically</u> tracking said trackable marker with a non-radiological locating system, post-replacement femoral parameters in relation to the pelvis; and

comparing said pre-replacement and said post-replacement parameters in a computer model.


6.    (previously presented) The method of claim 5, wherein said trackable marker is secured to said femur by a clamp mounting said trackable marker.


7.    (previously presented) The method of claim 5, wherein said step of attaching a trackable marker comprises:

positioning a collar over the trochanter, said collar bearing an optical tracking target; and

attaching said collar to the femur by a ligature about the femur, said ligature arranged to pull the collar firmly against the trochanter.


8.    (currently amended) A system for measuring and assessing the skeletal geometry of a hip joint during surgery, suitable for surgical navigation of a hip arthroplasty operation, comprising:

~~an~~ locating system which determines positions and orientations

of <u>optically</u> trackable markers <u>without reference to previously</u> <u>obtained radiological data;</u>

a computer, interfaced to said locating system to receive tracking data, and calculating from said tracking data the positions of tracked objects in relation to a generic computer model of a patient's hip geometry;

a software module, executable on said computer, which defines the patient's pelvic plane without reference to previously obtained radiological data, by locating at least three pelvic landmarks;

a pelvic tracking marker <u>having at least three optical</u> <u>tracking references</u>, fixable to the pelvic bone and <u>optically</u> tracked by said locating system, to track in real time the orientation of said pelvic plane;

a femoral tracking marker <u>having at least three optical</u> <u>tracking references</u>, securely attachable to a femur of the patient and <u>optically</u> trackable by said locating system to detect changes in leg length and femoral offset; and

a non-penetrating means for securing said femoral tracking marker to the femur of the patient.

9. (cancelled)

10. (previously presented) The system of claim 8, further comprising a trackable acetabular navigation tool, capable of fixation to an acetabular shell implant;

and wherein said software module calculates the relationship between said navigation tool and a real time orientation of said pelvic plane, and displays said relationship, to facilitate establishing proper geometry of said shell implant during surgery.

11. (currently amended) The system of claim ~~9~~8, further comprising an trackable, manual probe for acquiring the positions of said pelvic landmarks <u>without reference to previously obtained radiological data by touching, with said trackable, manual probe,</u>~~from~~ at least three <u>superficial points corresponding to respective</u> recognizable anatomic features of the pelvis <u>and tracking said probe with said locating system~~,~~;</u>

and wherein said software module defines said pelvic plane from at least three and not more than four pelvic landmarks.


12. (new) The system of claim 10, further comprising an trackable, manual probe for touching to at least three points on said acetabular implant, said locating system arranged to track said trackable, manual probe,

said system arranged to calculate an orientation of said acetabular implant based on the locations of said at least three points on said acetabular implant and to compare the calculated orientation of said acetabular implant to a desired orientation to verify proper orientation of said implant.